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Insect Control
Southern Oregon-Northern California Project

STATISTICAL DATA

on the

WESTERN PINE BEETLE SITUATION

on the

PROPOSED SOUTHERN OREGON-NORTHERN CALIFORNIA CONTROL PROJECT

as revealed by the

SURVEY OF AUGUST, SEPTEMBER AND OCTOBER, 1921, COOPERATIVELY CARRIED OUT

by the

Bureau of Entomology

Forest Service

Indian Service

and the

Klamath-Lake Counties Forest Fire Association

Volume A

No. 1.

October 25, 1921

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U. S. Forest Service
Portland, Oregon.

TABLE OF CONTENTS - PAGE ONE

DATA BY AREAS

Number of table

Title of Table																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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TABLE OF CONTENTS - PAGE TWO
SUMMARIES FOR COMPLETE PROJECT AREA

Title of Table	Table Number
(Totals for each of the 5 areas.)	
Non-timbered and timbered acreages.	32
Timbered acreages and yellow pine volumes by ownership.	33
1920 beetle damage in yellow pine in number of trees and volume.	34
1920 beetle damage in yellow pine in board feet and value.	35
Average of volume of yellow pine tree killed in 1920 - an average for each of the 40 units in the project.	36
Percentage ratio of 1920 volume of beetle damage to total yellow pine volume.	37
Cost of control - spring of 1922.	38
 TIMBERED ACREAGES, YELLOW PINE VOLUMES AND CONTROL COSTS, DIVIDED ACCORDING TO RESPONSIBILITY.	 39

PREFACE

The data presented in this report were secured by an insect survey conducted cooperatively by the Bureau of Entomology, the Forest Service, the Indian Service and the Klamath-Lake Counties Forest Fire Association. The field work was carried on in August, September and October, 1921. Special credit is due the Klamath-Lake Counties Forest Fire Association, the representative of the private owners involved in project, for the splendid cooperation given the federal agencies in the conduct of this survey.

The data included in this report are based on a survey which was far more intensive and detailed than that conducted in April, 1921, the results of which were incorporated in the Forest Service reports of May 10 and May 20, 1921.

Method of the Survey

The insect survey methods developed by the Bureau of Entomology were used in this survey by all the men engaged on the survey. These insect survey methods have been fully tested on a large scale in various portions of the Pacific Coast pine belt.

The survey was undertaken in order to make possible the outlining of a definite control plan for the immediate reduction of the enormous losses in the yellow pine timber which have been caused by the western pine beetle (*Dendroctonus brevicornis*) in the area under consideration, namely, the so-called southern Oregon-northern California control project as outlined in the accompanying map. Yellow pine timber of high quality, under federal and private ownership, is suffering tremendously as the result of the depredations of the western pine beetle.

A description of the survey and a discussion of the data revealed by it, will be made the subject of a special report to be completed not later than November 15, 1921. The following preliminary statements will suffice, it is hoped, to enable an understanding of the more important facts revealed by the tabulations given herewith.

The Project Area.

The project is substantially the same as that under consideration in the report of May 10, 1921. It includes parts of the Modoc and Klamath National Forests in northern California, portions of the Fremont and Crater National Forests in southern Oregon, a large area in the Klamath Indian Reservation, considerable vacant public land, a small acreage of timber controlled by the state, and an enormous acreage of intermingled privately owned yellow pine. For convenience, the project has been divided into five areas, as follows:

- Modoc Area
- Fremont Area
- Klamath Indian Reservation.
- Area south of the Klamath Indian Reservation.
- Area west of Klamath Lake.

Division into Units.

Each one of the five above-named areas is divided into so-called units. This division into units is purely arbitrary. The infestation in the various units is closely inter-related and the unit divisions were made solely for convenience in settling the administrative problems which the control work entails. The boundaries between the units are often based on topographic features, but occasionally they follow ownership lines.

Computation of Acreages by Units

The timbered acreages and non-timbered acreages were computed section by section, using all existing data, as well as the information secured in the course of the field work. The computations are believed to be fairly accurate.

Computation of Yellow Pine Volume by Units

Considerable data on the volume of the yellow pine stands on the federal lands included in the survey were available. Especially is this true of the National Forest and Indian Reservation yellow pine timber. Since most of the privately owned timber within the proposed project is under the protection of the Klamath-Lake Counties Forest Fire Association, this Association was able to furnish dependable information on the yellow pine stands in private ownership.

Ownership Data

The records in the County Clerks' offices in the various Counties were depended upon for the ownership status. These records were gone over section by section, and therefore, the acreages given for the various types of ownerships by units, by areas and for the project as a whole, can be depended upon.

Estimate of 1920 Beetle Damage

The figures given are very conservative. The survey was done with sufficient intensity to justify the 1920 beetle damage by the individual units. The "Klamath Volume Table, Scribner Decimal C, Form 674-V, U. S. Forest Service" was used as a basis for computing the timber volumes.

A basic value of \$5.00 per thousand board feet of yellow pine was adopted for the purpose of estimating the monetary loss occasioned by the western pine beetle. This figure is low, considering the stumpage prices obtained in this region by the Forest Service and the Indian Service in their timber sales.

for yellow pine of similar quality and accessibility.

It is not possible to estimate the western pine beetle damage in any one calendar year until in the early summer of the following year, the earliest time when the detection of the beetle-killed trees by the fading of the foliage is possible. Before early summer, the foliage of all the trees attacked in the fall of the previous year will not have faded. Therefore, the 1921 beetle loss could not be obtained in this survey.

Relation of Volume of 1920 Beetle Damage to Total Yellow Pine Volume

This ratio is given for each unit, for each area and for the project as a whole. The ratios indicate the seriousness of the pine beetle menace even when the losses are not at their peak, as was the case in 1920, and the necessity for the prompt inauguration of control measures.

Estimate of Control Costs

There are two generations of the western pine beetle each year in this region. The so-called overwintering or second generation is the generation against which the control measures are directed in the spring control operations, the major control operations of the year.

For the purpose of control estimates, it is necessary to assume that the volume of the timber infested by the second generation is equal to that attacked by the first generation. In other words, it must be assumed that one-half of the 1920 infestation (the only available and most recent infestation on which data could be secured) was caused by the overwintering generation.

The estimate of \$4.50 per thousand board feet of yellow pine to be treated, is based on the cost of past control operations in the region, the present labor conditions and prices of equipment and supplies, and existing conditions on the project area itself.

The apportionment of control costs between the federal government and the private owners was made on the proportionate volume of timber to be treated on the federal lands and the private lands. If any other basis of cooperation is agreed upon, as for instance an acreage basis which disregards the ownership distribution of the infested timber, a revision of this apportionment of the control costs between the federal government and the private owners will be necessary.

Further, the control costs as given in this report are based on the assumption that the entire project area will be covered by the spring 1922 control operations. The Bureau of Entomology may find it desirable, because of entomological considerations, to limit the spring 1922 control operations to the strictly epidemic infestation. Such a limitation would result in a reduction of the control costs of the Fremont and Modoc areas in particular. It is therefore evident that the total cost of the spring 1922 control operations and its apportionment by ownership can be fixed only after the Bureau's decision as to the areas which are to be covered by the spring 1922 operations and after the various government and private agencies have agreed on a basis for the cost apportionment.

The Survey Report of November 15, 1921.

A report descriptive of the survey which yielded the statistical data given herewith will be completed not later than November 15, 1921.

The Control Plan for the Project.

The control plan for the project will be prepared immediately after a tentative plan of co-operation between the various government and private agencies has been agreed upon and after the completion of the survey report. This report will be submitted for consideration on or about November 25, 1921.

Organization of this Report.

This report consists entirely of tabulations. As indicated by the Table of Contents, tables 32-39 inclusive summarize the situation on the entire project. The table numbers referring to the five areas in the project are as follows:

Modoc Area	1-6 Inclusive
Premont Area	7-13 "
Klamath Indian Reservation	14-17 "
Area south of Reservation	18-24 "
Area west of Klamath-Lake	25-31 "

October 25, 1921.


A. U. JAENICKE

U. S. Forest Service.

Table No. 1

Moose Area

Non-timbered and Timbered Acreages*

Name of Unit	Non-timbered Acreage	Timbered Acreage	Total Acreage of Unit
Crowder Pond	2,760	44,240	46,000
Goose Lake	4,400	38,600	43,000
Four Mile	1,440	12,560	14,000
Totals	8,600	95,400	104,000

*See Table No. 2 for ownership data on timbered acreages.

Table No. 2

Modoc Area

Timbered Acreage and Yellow Pine Volumes by Ownerships

Name of Unit	Modoc N. P.		Private		Total	
	Timbered Acreage	Board Feet	Timbered Acreage	Board Feet	Timbered Acreage	Board Feet
Crowder Flat	25,000	200,000,000	18,840	253,500,000	43,840	453,500,000
Goose Lake	25,040	200,320,000	15,760	176,000,000	36,800	376,320,000
Four Mile	11,960	59,800,000	400	2,000,000	12,360	61,800,000
Totals	62,000	460,120,000	33,000	433,500,000	95,000	893,620,000

Table No. 2

Modoc Area

1920 Beetle Damage in Yellow Pine

Number of Trees* and Volume

Name of Unit	Modoc N. P.		Private		Total	
	: Volume in :		: Volume in :		: Volume in :	
	: Number of Trees:	: Bd.ft.	: Number of Trees:	: Bd.ft.	: Number of Trees:	: Bd.ft.
Crowder Flat	1,275	1,300,000	1,895	1,841,000	3,080	3,141,000
Goose Lake	1,385	1,385,000	1,185	1,185,000	2,570	2,570,000
Four Mile	475	428,000	25	22,000	500	450,000
Total	3,135	3,113,000	3,015	3,048,000	6,150	6,161,000

*Average volume of individual trees killed by beetles in 1920, given in Table No. 36.

Table No. 1

Modoc Area

1920 Beetle Damage in Yellow Pine

Name of Unit	Modoc E. F.		Private		Total	
	Volume in	Value at	Volume in	Value at	Volume in	Value at
	Board Feet	3.00 per M	Board Feet	3.00 per M	Board Feet	3.00 per M
Crowder Flat	1,300,000	\$3,900	1,841,000	\$5,523	3,141,000	\$9,423
Goose Lake	1,865,000	4,155	1,185,000	3,555	2,570,000	7,710
Four Mile	428,000	1,284	22,000	66	450,000	1,350
Total	3,113,000	\$9,339	3,048,000	\$9,144	6,161,000	\$18,483

Table No. 2

Modoc Area

Percentage Relationship of 1920 Beetle Damage to Total Yellow Pine Volume*.

Name of Unit	Total Yellow Pine Volume in Board Feet	1920 Beetle Damage in Board Feet	Ratio of 1920 Beetle Damage to Total Yellow Pine Volume
Crowder Flat	453,500,000	3,141,000	.7 of one per cent
Goose Lake	378,320,000	2,570,000	.7 of one per cent
Four Mile	61,800,000	450,000	.7 of one per cent
	893,620,000	6,161,000	.7 of one per cent

*Great variation in the intensity of the infestation in various parts of a given unit is characteristic of these units. This is shown by the map. Therefore, the "1920 beetle damage - total volume" ratio must not be used as a basis for judging the necessity for control work. The ratio is given to the nearest tenth of one per cent.

Table No. 6

Modoc Area

Cost of Control--Spring of 1922*

Name of Unit	Modoc N. P.		Private		Total	
	Volume in Board Feet	Cost	Volume in Board Feet	Cost	Volume in Board Feet	Cost
Crowder Flat	650,000	\$2,925	920,500	\$4,142	1,570,500	\$7,067
Goose Lake	692,500	3,116	592,500	2,666	1,285,000	5,782
Four Mile	214,000	963	11,000	50	225,000	1,013
Total	1,556,500	\$7,004	1,524,000	\$6,858	3,080,500	\$13,862

*Volume to be treated is based on $\frac{1}{2}$ of volume of 1920 beetle loss in yellow pine. Cost of control is estimated at \$4.50 per thousand board feet of yellow pine to be treated.

PHOTOMOUNT AREA (Tables 7-13 ins.)

PHOTOMOUNT AREA (Tables 7-13 ins.)

Table No. 7

Fremont Area

Non-Timbered and Timbered Acresages*

Name of Unit	Non-timbered Acreage	Timbered Acreage	Total Acreage of Unit
Herritt Creek	5,320	23,040	28,360
Meryl Creek	11,260	57,860	69,120
Deering Creek	2,000	53,520	55,520
Owens	3,800	39,480	43,280
Quartz Valley	3,720	29,880	33,600
Horsefly	10,960	47,520	58,480
Goodlowe	15,440	17,440	30,880
Goab Rock	10,680	61,160	79,840
Ray Creek	9,480	34,680	44,160
Dog Lake	19,760	53,840	73,600
Total	98,420	418,420	516,840

*See Table No. 8 for ownership data on timbered acreages.

Table No. 8

Fremont Area

Timbered Acreages by Ownerships

Name of Unit	Fremont N. E.	Public Domain	State	Private	Total
Herritt Creek	5,760	2,040	0	15,240	23,040
Meryl Creek	5,420	7,040	640	44,560	57,660
Deming Creek	27,520	5,360	680	19,960	53,520
Owens	11,600	480	0	27,400	39,480
Quartz Valley	2,520	1,280	0	26,080	29,880
Horsefly	6,360	20,120	640	20,400	47,520
Goodlowe	6,200	4,920	560	5,760	17,440
Scab Rock	56,360	13,600	800	13,400	61,160
Hay Creek	29,800	480	0	4,400	34,680
Dog Lake	41,400	2,560	0	9,880	53,840
Totals	169,940	57,880	3,520	187,080	418,420

Table No. 3

Fremont Area

Timbered Acreages and Yellow Pine Volumes by Ownerships

of Unit:	Fremont H. P.		Vacant Public Domain:		State		Private		Totals	
	Timbered:		Timbered:		Timbered:		Timbered:		Timbered:	
	Acreage	Board Feet	Acreage	Board Feet	Acreage	Board Feet	Acreage	Board Feet	Acreage	Board Feet
Itt Creek	5,760	9,000,000	2,040	4,000,000	0	0	15,240	213,000,000	23,040	256,000,000
l Creek	5,420	60,000,000	7,040	14,000,000	840	2,000,000	44,560	579,000,000	57,860	655,000,000
ng Creek	27,520	275,000,000	5,360	11,000,000	680	1,400,000	19,960	200,000,000	53,520	487,400,000
s	11,600	128,000,000	480	1,000,000	0	0	27,400	301,000,000	39,480	430,000,000
tz Valley	2,520	28,000,000	1,280	3,000,000	0	0	26,080	355,000,000	29,880	396,000,000
efly	6,360	64,000,000	20,120	40,000,000	640	1,300,000	20,400	204,000,000	47,520	309,300,000
lowe	6,200	43,000,000	4,920	10,000,000	560	1,000,000	5,760	63,000,000	17,440	117,000,000
Rock	33,360	234,000,000	13,600	27,000,000	800	2,000,000	13,400	94,000,000	61,160	357,000,000
Creek	29,800	238,000,000	480	1,000,000	0	0	4,400	53,000,000	34,680	292,000,000
Lake	41,400	200,000,000	2,560	5,000,000	0	0	2,480	62,000,000	53,940	364,000,000
Total	169,940	1,369,000,000	57,880	116,000,000	3,520	7,700,000	187,080	2,161,000,000	418,420	3,653,700,000

Table No. 30

Fremont Area

1920 Beetle Damage in Yellow Pine

Number of Trees* and Volume

	Fremont N. P.		Public Domain		State		Private		Total	
	; VOLUME IN ;		; VOLUME IN ;		; VOLUME IN ;		; VOLUME IN ;		; VOLUME IN ;	
Name of Unit	No. of Trees.	Bd.ft.	No. of Trees.	Bd.ft.	No. of Trees.	Bd.ft.	No. of Trees.	Bd.ft.	No. of Trees.	Bd.ft.
Marriott Creek	158	142,000	30	27,000	0	0	529	476,000	717	645,000
Meryl Creek	168	151,000	342	308,000	4	4,000	3,975	3,578,000	4,489	4,041,000
Deming Creek	1,028	1,000,000	662	600,000	125	115,000	3,760	3,500,000	5,575	5,215,000
Owens	2,157	1,726,000	117	94,000	0	0	4,637	3,710,000	6,911	5,530,000
Quartz Valley	270	216,000	115	92,000	0	0	2,660	2,128,000	3,045	2,436,000
Horsefly	1,700	1,360,000	2,064	1,650,000	0	0	3,821	3,057,000	7,585	6,067,000
Goodlows	485	291,000	220	132,000	27	16,000	348	299,000	1,080	648,000
Seab Rock	1,027	822,000	669	535,000	35	28,000	594	475,000	2,325	1,860,000
Hay Creek	1,002	601,000	16	10,000	0	0	302	181,000	1,320	792,000
Dog Lake	1,414	1,132,000	122	98,000	0	0	527	422,000	2,063	1,652,000
Total	9,411	7,441,000	4,357	3,546,000	191	163,000	21,153	17,736,000	35,112	29,886,000

*Average volume of individual 1920 beetle-killed trees given in Table No. 36

Table No. 11

Fremont Area

1920 Beetle Damage in Yellow Pine

Name of Unit	Fremont N. P.		Public Domain		State		Private		Total	
	Volume in	Value at	Volume in	Value at	Volume in	Value at	Volume in	Value at	Volume in	Value at
	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M	Board Feet: 3.00 per M
Herritt Creek	142,000	\$426	27,000	\$81	0	0	475,000	\$1,425	645,000	\$1,935
Meryl Creek	151,000	453	308,000	924	4,000	\$12	3,578,000	10,734	4,041,000	12,123
Deming Creek	1,000,000	3,000	600,000	1,800	115,000	345	3,500,000	10,500	5,215,000	15,645
Owens	1,725,000	5,175	94,000	282	0	0	3,710,000	11,130	5,530,000	16,590
Quartz Valley	216,000	648	92,000	276	0	0	2,128,000	6,384	2,436,000	7,308
Horsefly	1,360,000	4,080	1,650,000	4,950	0	0	3,057,000	9,171	6,067,000	18,201
Goodlowe	291,000	873	132,000	396	16,000	48	209,000	627	648,000	1,944
Scab Rock	822,000	2,466	535,000	1,605	28,000	84	475,000	1,425	1,860,000	5,580
Hay Creek	601,000	1,803	10,000	30	0	0	181,000	543	792,000	2,376
Dog Lake	1,132,000	3,396	98,000	294	0	0	422,000	1,266	1,652,000	4,956
Total	7,441,000	\$22,323	3,546,000	\$10,638	163,000	\$489	17,736,000	\$53,208	28,886,000	\$86,659

Table No. 12

Fremont Area

Percentage Ratio of 1920 Beetle Damage to Total Yellow Pine Volume*

Name of Unit	Total Yellow Pine Volume in Board Feet	1920 Beetle Damage in Board Feet	Ratio of 1920 Beetle Damage to Total Pine Volume
Herritt Creek	226,000,000	645,000	Three-tenths of one per cent.
Meryl Creek	655,000,000	4,041,000	Six-tenths of one per cent.
Deming Creek	487,400,000	5,215,000	One and one-tenth of one per cent.
Owens	430,000,000	5,530,000	One and three-tenths of one per cent.
Quartz Valley	396,000,000	2,436,000	Six-tenths of one per cent.
Horsefly	309,300,000	6,967,000	Two per cent.
Goodlowe	117,000,000	648,000	Six-tenths of one per cent.
Scab Rock	357,000,000	1,860,000	Five-tenths of one per cent.
Hay Creek	292,000,000	792,000	Three-tenths of one per cent.
Dog Lake	384,000,000	1,652,000	Four-tenths of one per cent.
	3,653,700,000	28,886,000	Eight-tenths of one per cent.

*Great variation in the intensity of the infestation in various parts of most of these units is a general characteristic of the units in the Fremont Area. This is shown by the map. Therefore, the "1920 beetle damage - total volume" ratios must not be used as a basis for judging the necessity for control work. The ratios are given to the nearest tenth of one per cent.

Table No. 13

Fremont Area

Cost of Control--Spring of 1922*

Name of Unit	Fremont N. F.	Public Domain	State	Private	Total					
	Volume to be treated.	Volume to be treated.	Volume to be treated.	Volume to be treated.	Volume to be treated.					
	Board Feet.	Board Feet.	Board Feet	Board Feet	Board Feet					
	Cost	Cost	Cost	Cost	Cost					
Merritt Creek	71,000	\$319	13,500	\$61	0	0	238,000	\$1,071	322,500	\$1,451
Meryl Creek	75,500	340	154,000	693	2,000	9	1,789,000	8,050	2,020,500	9,092
Deming Creek	500,000	2,250	300,000	1,350	57,500	259	1,750,000	7,875	2,607,500	11,734
Owens	863,000	3,684	47,000	211	0	0	1,855,000	8,348	2,765,000	12,443
Quartz Valley	108,000	486	46,000	207	0	0	1,064,000	4,788	1,218,000	5,481
Horsefly	680,000	3,060	825,000	3,713	0	0	1,528,500	6,878	3,033,500	13,651
Goodlowe	145,500	655	66,000	297	8,000	36	104,500	470	324,000	1,458
Seab Rock	411,000	1,849	267,500	1,204	14,000	63	237,500	1,069	930,000	4,185
Hay Creek	300,500	1,352	5,000	23	0	0	90,500	407	396,000	1,782
Dog Lake	566,000	2,542	49,000	220	0	0	211,000	950	826,000	3,717
Total	3,720,500	\$16,742	1,773,000	\$7,979	81,500	\$367	8,868,000	\$39,906	14,443,000	\$64,994

*Volume to be treated is based on $\frac{1}{2}$ of volume of 1920 beetle loss. Cost of control is based on \$4.50 per thousand board feet of yellow pine to be treated.

Table No. 14

Flameth Indian Reservation
Acreages and Yellow Pine Volumes

Name of Unit	Timbered Acreage	Volume of Yellow Pine in Board Feet
Chiloquin	12,400	168,000,000
Antelope	17,900	214,000,000
Sprague Canyon	2,500	28,000,000
Little Sprague	3,600	37,000,000
Eggman	1,200 (2/3 cutover)	3,000,000
Saddle Mountain	27,300	293,000,000
Trout Creek	20,900	182,000,000
Squaw Flat	13,000	165,000,000
Yainax	7,300	80,000,000
Whiskey Creek	10,200	59,000,000
Bly	33,100	360,000,000
Black Hills "	30,000	300,000,000
Totals	179,400	1,889,000,000

*Data on this unit are rough estimates. Additional field work necessary

Table No. 15

Klamath Indian Reservation

1920 Beetle Damage in Yellow Pine

Name of Unit	Number of Trees	Volume in Board Feet	Loss at 3.00 per B
Chiloquin	3,470	2,780,000	83,340
Antelope	5,650	3,960,000	11,880
Sprague Canyon	530	340,000	1,020
Little Sprague	460	360,000	1,080
Eggman	100	80,000	240
Saddle Mountain	3,880	3,880,000	11,640
Trout Creek	2,720	1,900,000	5,700
Squaw Flat	1,310	1,310,000	3,930
Yainax	1,880	940,000	2,820
Whiskey Creek	1,880	1,130,000	3,390
Bly	5,690	3,410,000	10,230
Black Hills	4,700	2,820,000	8,460
Totals	32,120	22,910,000	\$68,730

See Table 36 for volume of average tree killed by beetles in 1920.

Table No. 16

Klamath Indian Reservation

Percentage Ratio of 1920 Beetle Damage to Total Yellow Pine Volume*

Name of Unit	Total Yellow Pine Volume in Board Feet	1920 Beetle Damage in Board Feet	Ratio of 1920 Beetle Damage to Total Yellow Pine Volume
Chiloquin	168,000,000	2,780,000	One and six-tenths of one per cent.
Antelope	214,000,000	3,960,000	One and nine-tenths of one per cent.
Sprague Canyon	28,000,000	340,000	One and two-tenths of one per cent.
Little Sprague	37,000,000	360,000	One per cent.
Eggman	3,000,000	80,000	Two and seven-tenths of one per cent.
Saddle Mountain	293,000,000	3,880,000	One and three-tenths of one per cent.
Trout Creek	182,000,000	1,900,000	One per cent.
Squaw Flat	165,000,000	1,310,000	Eight-tenths of one per cent.
Yainax	80,000,000	940,000	One and two-tenths of one per cent.
Whiskey Creek	59,000,000	1,130,000	One and nine-tenths of one per cent.
Bly	360,000,000	3,410,000	Nine-tenths of one per cent.
Black Hills	300,000,000	2,820,000	Nine-tenths of one per cent.
	1,869,000,000	22,910,000	One and two-tenths of one per cent.

*Great variation exists in the intensity of the infestation in various parts of most of the units on the Klamath Indian Reservation. This is shown by the map. Therefore, the "1920 beetle damage - total volume" ratios must not be used as a basis for judging the necessity for control work. The ratios are given to the nearest tenth of one per cent.

Table No. 17

Klamath Indian Reservation

Cost of Control--Spring of 1922*

Name of Unit	Volume in Board Feet to be treated	Cost of Treatment
Chiloquin	1,390,000	\$6,255
Antelope	1,980,000	8,910
Sprague Canyon	170,000	765
Little Sprague	180,000	810
Eggman	40,000	180
Saddle Mountain	1,940,000	8,730
Trout Creek	950,000	4,275
Squaw Flat	655,000	2,948
Yainax	470,000	2,115
Whiskey Creek	565,000	2,542
Bly	1,705,000	7,673
Black Hills	1,410,000	6,345
Total	11,455,000	51,547

*Volume to be treated is based on $\frac{1}{2}$ of volume of 1920 beetle loss in yellow pine. Cost of control is estimated at \$4.50 per thousand board feet of

AREA SOUTH OF INDIAN RESERVATION (Tables 18-24 inc.)

AREA SOUTH OF INDIAN RESERVATION (Tables 18-24 inc.)

Table No. 18

Area South of Klamath Indian Reservation

Non-timbered and Timbered Acreages*

Name of Unit	Non-timbered Acreage	Timbered Acreage	Total Acreage of Unit
Willow Flat	3,700	22,620	26,320
Royston	5,040	21,600	26,640
Rock Canyon	5,700	31,700	37,400
Hildebrand	5,020	26,050	31,310
Gwen	2,475	33,495	35,970
Shaner Mt.	4,560	9,520	14,080
Totals	26,495	145,185	171,680

*See Table No. 19 for ownership data on timbered acreages.

Table No. 19

Area South of Klamath Indian Reservation

Timbered Acres by Ownership

Name of Unit	Private	State	Public Domain	Totals
Willow Flat	16,400	450	5,740	22,620
Boyston	18,120	800	2,880	21,800
Rock Canyon	19,560	1,480	10,660	31,700
Hildebrand	22,015	240	3,795	26,050
Swan	30,650	140	2,505	33,495
Shaner Mt.	8,320	0	1,200	9,520
Totals	115,265	3,140	26,780	145,185

Table No. 30

Area South of Klamath Indian Reservation

Acres and Yellow Pine Volume by Ownership

Name of Unit	Private		Public Domain		State		Total	
	Timbered Acres	Board Feet	Timbered Acres	Board Feet	Timbered Acres	Board Feet	Timbered Acres	Board Feet
Willow Flat	16,400	180,000,000	5,740	11,000,000	480	1,000,000	22,620	192,000,000
Reyton	18,120	217,000,000	2,880	6,000,000	800	2,000,000	21,800	225,000,000
Rock Canyon	19,560	176,000,000	10,660	21,000,000	1,480	3,000,000	31,700	200,000,000
Hildebrand	22,015	242,000,000	3,795	8,000,000	240	500,000	26,050	250,500,000
Swan	30,850	401,000,000	2,505	5,000,000	140	250,000	33,495	406,250,000
Shaner Mt.	8,320	42,000,000	1,200	2,500,000	0	0	9,520	44,500,000
Totals	115,265	1,258,000,000	26,780	53,500,000	3,140	6,750,000	145,185	1,318,250,000

Table No. 31

Area South of Klamath Indian Reservation

1920 Beetle Damage in Yellow Pine

Number of Trees* and Volume

Name of Unit	Private		Public Domain		State		Total	
	No. of Trees	Volume in Bd. ft.	No. of Trees	Volume in Bd. ft.	No. of Trees	Volume in Bd. ft.	No. of Trees	Volume in Bd. ft.
Willow Flat	2,171	1,520,000	470	329,000	58	41,000	2,699	1,890,000
Royston	2,771	2,217,000	424	339,000	75	60,000	3,270	2,616,000
Rock Canyon	2,297	1,608,000	1,293	905,000	128	90,000	3,718	2,603,000
Hildebrand	3,994	3,595,000	777	699,000	71	64,000	4,842	4,358,000
Swan	5,536	4,429,000	285	228,000	31	25,000	5,852	4,682,000
Shaner Mt.	3,213	1,606,000	472	236,000	0	0	3,685	1,842,000
Totals	19,982	14,975,000	3,721	2,736,000	363	280,000	24,066	17,991,000

Average volume of individual trees given in Table No. 36

Table No. 112

Area South of Indian Reservation

1920 Beetle Damage in Yellow Pine

Volume and Value of Damage

Name of Unit	Private		Public Domain		State		Total	
	Volume in Bd.ft.	Value at 3.00 per M	Volume in Bd.ft.	Value at 3.00 per M	Volume in Bd.ft.	Value at 3.00 per M	Volume in Bd.ft.	Value at 3.00 per M
Willow Flat	1,520,000	\$4,560	329,000	\$987	41,000	\$123	1,890,000	\$5,670
Royston	2,217,000	6,651	339,000	1,017	60,000	180	2,616,000	7,848
Rock Canyon	1,608,000	4,824	935,000	2,715	90,000	270	2,603,000	7,609
Hildebrand	3,595,000	10,785	699,000	2,097	64,000	192	4,358,000	13,074
Swan	4,429,000	13,287	228,000	684	25,000	75	4,682,000	14,046
Shonar Mt.	1,606,000	4,818	236,000	708	0	0	1,842,000	5,526
Total	14,975,000	\$44,925	2,736,000	\$8,208	280,000	\$840	17,991,000	\$53,973

Table No. 22

Area South of Klamath Indian Reservation

Percentage Ratio of 1920 Beetle Damage to Total Yellow Pine Volume*

Name of Unit	Total Yellow Pine Volume in Board Feet	1920 Beetle Damage in Board Feet	Ratio of 1920 Beetle Damage to Total Yellow Pine Volume.
Willow Flat	192,000,000	1,890,000	One per cent.
Boyston	225,000,000	2,616,000	One and two-tenths of one per cent.
Rock Canyon	200,000,000	2,603,000	One and three-tenths of one per cent.
Hildebrand	250,500,000	4,358,000	Two per cent.
Gunn	406,250,000	4,682,000	One and two-tenths of one per cent.
Shonor Mt.	44,500,000	1,842,000	Four and one-tenth of one per cent.
	1,318,250,000	17,991,000	One and four-tenths of one per cent.

*Great variation exists in the intensity of the infestation in various parts of the units in the area south of the Klamath Indian Reservation. This is shown by the map. Therefore, the "1920 beetle damage - total volume" ratios must not be used as a basis for judging the necessity for control work. The ratios are given to the nearest tenth of one per cent.

Table No. 24

Area South of Indian Reservation

Cost of Control--Spring of 1922*

Name of Unit	Private		Public Domain		State		Total	
	Volume to be treated	Cost	Volume to be treated	Cost	Volume to be treated	Cost	Volume to be treated	Cost
Willow Flat	760,000	\$3,420	164,500	\$740	20,500	\$92	945,000	\$4,252
Royston	1,108,500	4,968	169,500	763	30,000	156	1,308,000	5,886
Rock Canyon	804,000	3,618	452,500	2,036	45,000	203	1,301,500	5,857
Hildebrand	1,797,500	8,089	349,500	1,573	32,000	144	2,179,000	9,806
Swan Mt.	2,214,500	9,965	114,000	513	12,500	56	2,341,000	10,534
Shoner Mt.	803,000	3,614	118,000	531	0	0	921,000	4,145
Total	7,487,500	\$33,694	1,368,000	\$6,156	140,000	\$630	8,995,500	\$40,480

*Volume to be treated is based on $\frac{1}{2}$ of volume of 1920 beetle loss in yellow pine. Cost of control is estimated at \$4.50 per thousand board feet of yellow pine to be treated.

AREA WEST OF Klamath Lake (Tables 25-31 inc.)

AREA WEST OF Klamath Lake (Tables 25-31 inc.)

Table No. 25

Area West of Klamath Lake

Non-timbered and Timbered Acreages*

Name of Unit	Non-timbered Acreage	Timbered Acreage	Total Acreage of Unit
Jenny Creek	160	49,120	49,280
Johnson Prairie	200	52,860	53,060
Pokegama	160	55,260	55,420
Chase Butte	1,280	59,500	60,780
Clover Station	1,200	53,040	54,240
Round Lake	2,070	10,030	12,100
Wocus	1,200	9,900	11,100
Aspen Lake	3,720	20,260	23,980
Eagle Ridge	400	17,100	17,500
Totals	10,390	327,130	337,520

*See Table No. 26 for ownership data on timbered acreages.

Table No. 26

Area West of Klamath Lake

Timbered Acreages by Ownerships

Name of Unit	Grater N. P.	Klamath N. P.	and C	Vacant	State	Private	Total
Jenny Creek	1,660	0	16,680	2,760	0	28,000	49,120
Johnson Prairie	4,400	0	13,800	440	0	34,220	52,860
Pokogama	0	760	9,060	2,600	0	42,640	55,260
Chase Butte	0	1,240	15,060	1,400	0	41,800	59,500
Glover Station	5,960	0	7,480	280	0	39,320	53,040
Round Lake	0	0	0	0	40	10,050	10,090
Wocus	0	0	0	0	0	9,900	9,900
Aspen Lake	1,280	0	0	0	0	18,980	20,260
Eagle Ridge	0	0	0	0	0	17,100	17,100
Totals	13,320	2,000	62,080	7,480	40	242,210	327,130

Table No. 27

Area West of Klamath Lake

Timbered Acreage and Yellow Pine Volume by Ownership

Unit:	Crater N.F.	Klamath N.F.	O and G Grant	Public Domain	State	Private	Total
	Timbered: Acreage:Board Feet	Timbered: Acreage:Board Feet	Timbered: Acreage:Board Feet	Timbered: Acreage:Board Feet	Timbered: Acreage:Board Feet	Timbered: Acreage:Board Feet	Timbered: Acreage:Board Feet
Jenny Creek	1,480 9,000,000	0 0	16,680 59,000,000	2,760 6,000,000	0 0	28,000 420,000,000	49,120 494,000,000
Johnson Prairie	4,400 24,000,000	0 0	13,800 43,000,000	440 900,000	0 0	34,220 548,000,000	52,860 615,900,000
Poksgunn	0 0	760 2,500,000	9,060 55,000,000	2,600 5,000,000	0 0	42,840 657,000,000	55,260 919,500,000
Chase Butte	0 0	1,240 3,000,000	15,060 130,000,000	1,400 3,000,000	0 0	41,800 505,000,000	59,500 721,000,000
Clover Station	5,960 33,000,000	0 0	7,480 40,000,000	280 600,000	0 0	39,320 551,000,000	53,040 624,600,000
Round Lake	0 0	0 0	0 0	0 0	40 500,000	10,050 121,000,000	10,090 121,500,000
Wocus	0 0	0 0	0 0	0 0	0 0	9,900 80,000,000	9,900 80,000,000
Aspen Lake	1,280 7,000,000	0 0	0 0	0 0	0 0	18,980 247,000,000	20,260 254,000,000
Reds Bluffs	0 0	0 0	0 0	0 0	0 0	17,100 232,000,000	17,100 239,000,000
Totals	15,320 73,000,000	2,000 5,500,000	62,080 317,000,000	7,480 15,500,000	40 500,000	242,210 3,648,000,000	327,130 4,069,500,000

Table No. 38

Area West of Klamath Lake

1920 Beetle Damage in Yellow Pine

Number of Trees* and Volume.

	Crater N. F.		Klamath N. F.		O and C Grant		Public Domain		Private		Total	
Name of Unit	No. Trees	Volume in Bd. ft.	No. Trees	Volume in Bd. ft.	No. Trees	Volume in Bd. ft.	No. Trees	Volume in Bd. ft.	No. Trees	Volume in Bd. ft.	No. Trees	Volume in Bd. ft.
Jenny Creek	11	13,000	0	0	682	818,000	124	149,000	1,056	1,300,000	1,873	2,280,000
Johnson Prairie	75	98,000	0	0	426	511,000	12	14,000	1,979	2,400,000	2,492	3,015,000
Pokagama	0	0	175	245,000	1,458	2,000,000	567	794,000	4,320	6,000,000	6,520	9,039,000
Chase Butte	0	0	55	55,000	2,812	2,000,000	325	325,000	4,804	4,800,000	7,196	7,180,000
Clover Station	458	550,000	0	0	593	712,000	25	30,000	6,039	7,200,000	7,115	8,492,000
Round Lake	0	0	0	0	0	0	5	6,000	2,312	2,600,000	2,317	2,606,000
Wocus	0	0	0	0	0	0	0	0	2,405	2,200,000	2,405	2,200,000
Aspen Lake	80	60,000	0	0	0	0	0	0	4,045	4,000,000	4,105	4,060,000
Eagle Ridge	0	0	0	0	0	0	0	0	3,397	2,400,000	3,397	2,400,000
Totals	604	713,000	230	300,000	5,171	6,041,000	1,058	1,318,000	30,357	32,900,000	37,420	41,272,000

*Average Volume of individual 1920 beetle-killed trees given in Table No. 36

Table No. 29

Area West of Klamath Lake
1920 Beetle Damage in Yellow Pine
Volume and Value of Damage

Name of Unit	Crater N. P.		Klamath N. P.		C and C		Public Domain		Private		Total	
	Volume in: Bd.-ft.	Value at 3.00	Volume in: Bd.-ft.	Value at 3.00	Volume in: Bd.-ft.	Value at 3.00	Volume in: Bd.-ft.	Value at 3.00	Volume in: Bd.-ft.	Value at 3.00	Volume in: Bd.-ft.	Value at 3.00
Juniper Creek	15,000	\$ 39	0	0	818,000	\$2,454	149,000	\$447	1,800,000	\$5,900	2,280,000	\$6,840
Johnson Prairie	90,000	270	0	0	511,000	1,533	14,000	42	2,400,000	7,200	3,015,000	9,045
Pebogawa	0	0	245,000	\$735	2,000,000	6,000	794,000	2,382	6,000,000	18,000	9,039,000	27,117
Glenn Butte	0	0	55,000	165	3,000,000	9,000	325,000	975	4,800,000	14,400	7,180,000	21,540
Glacier Station	550,000	1,650	0	0	712,000	2,136	30,000	90	7,200,000	21,600	8,492,000	25,476
Round Lake *	0	0	0	0	0	0	6,000	18	2,800,000	8,400	2,806,000	8,418
Woods	0	0	0	0	0	0	0	0	2,200,000	6,600	2,200,000	6,600
Aspen Lake	80,000	240	0	0	0	0	0	0	4,000,000	12,000	4,080,000	12,240
Red Bluffs	0	0	0	0	0	0	0	0	2,400,000	7,200	2,400,000	7,200
Totals	715,000	\$2,139	300,000	\$900	6,041,000	\$18,123	1,318,000	\$3,954	22,800,000	\$68,700	41,272,000	\$123,816

*The State of Oregon owns 40 acres in this unit, but the beetle damage is negligible.

Table No. 30

Area West of Klamath Lake

Percentage Ratio of 1920 Beetle Damage to Total Yellow Pine Volume*

Name of Unit	Total Yellow Pine Volume in Board Feet	1920 Beetle Damage in Board Feet	Ratio of 1920 Beetle Damage to Total of Yellow Pine Volume
Jenny Creek	494,000,000	2,280,000	Five-tenths of one per cent.
Johnson Prairie	615,900,000	3,015,000	Five-tenths of one per cent.
Pokegama	919,500,000	9,039,000	One per cent.
Chase Butte	721,000,000	7,180,000	One per cent.
Clover Station	624,600,000	8,492,000	One and four-tenths of one per cent.
Round Lake	121,500,000	2,606,000	Two and one-tenth of one per cent.
Wocus	80,000,000	2,200,000	Two and eight-tenths of one per cent.
Aspen Lake	254,000,000	4,060,000	One and six-tenths of one per cent.
Eagle Ridge	239,000,000	2,400,000	One per cent.
	4,069,500,000	41,272,000	One per cent.

*Great variation in the intensity of the infestation in various parts of most of these units is a general characteristic of the units in the area west of Klamath Lake. This is shown by the map. Therefore, the "1920 beetle damage - total volume" ratios must not be used as a basis for judging the necessity for control work. The ratios are given to the nearest tenth of one per cent.

Table No. 31

Area West of Klamath Lake

Cost of Control - Spring of 1922*

	Crater N.F.		Klamath N.F.		C and G		Public Domain		Private		Total	
	Volume in:		Volume in:		Volume in:		Volume in:		Volume in:		Volume in:	
Name of Unit	Bd.ft.	Cost	Bd.ft.	Cost	Bd.ft.	Cost	Bd.ft.	Cost	Bd.ft.	Cost	Bd.ft.	Cost
Jenny Creek	6,500	\$29	0	0	409,000	\$1,641	74,500	\$335	650,000	\$2,925	1,140,000	\$6,130
Johnson Prairie	45,000	202	0	0	255,500	1,150	7,000	31	1,200,000	5,400	1,507,500	6,781
Pohogama	0	0	122,500	\$551	1,000,000	4,500	397,000	1,787	3,000,000	13,500	4,519,500	20,338
Chase Butte	0	0	27,500	124	1,000,000	4,500	162,500	731	2,400,000	10,800	3,590,000	16,155
Clover Station	275,000	1,238	0	0	356,000	1,602	15,000	67	3,600,000	16,200	4,246,000	19,107
Round Lake	0	0	0	0	0	0	3,000	14	1,300,000	5,850	1,303,000	5,864
Woods	0	0	0	0	0	0	0	0	1,100,000	4,950	1,100,000	4,950
Aspen Lake	30,000	135	0	0	0	0	0	0	2,000,000	9,000	2,030,000	9,135
Esda Ridge	0	0	0	0	0	0	0	0	1,200,000	5,400	1,200,000	5,400
Total	356,500	\$1,604	150,000	\$675	3,020,500	\$13,593	659,000	\$2,965	16,450,000	\$74,025	20,636,000	\$92,862

*Volume to be treated is based on $\frac{1}{2}$ of volume of 1920 beetle loss in yellow pine. Cost of control is estimated at \$4.50 per thousand board feet of yellow pine to be treated.

Table No. 32

Survey of Southern Oregon-Northern California Control Project

Non-timbered and Timbered Acreages*

Area	Non-timbered Acreage	Timbered Acreage	Total Acreage of Area
Kodiak Area	8,600	95,000	103,600
Freemont Area	98,420	418,420	516,840
Klamath Indian Reservation	**	179,400	179,400
Area South of Reservation	26,495	145,185	171,680
Area West of Klamath Lake	10,390	327,130	337,520
Total for Entire Project	143,905	1,165,135	1,309,040

*See Table No. 32 for ownership data on timbered acreages and yellow pine volumes.

**No data available for dividing Indian Reservation area into non-timbered and timbered acreage.

Table No. 33

Summary of Southern Oregon-Northern California Control Project

Timbered Acreages and Yellow Pine Volumes by Ownership.

Ownership	Redwood Area		Fremont Area		Klamath Indian Reservation		Area South of Reservation		Area West of Klamath Lake		Totals	
	Timbered Acreage	Yellow Pine Volume in Board Feet	Timbered Acreage	Yellow Pine Volume in Board Feet	Timbered Acreage	Yellow Pine Volume in Board Feet	Timbered Acreage	Yellow Pine Volume in Board Feet	Timbered Acreage	Yellow Pine Volume in Board Feet	Timbered Acreage	Yellow Pine Volume in Board Feet
Modoc N. P.	62,000	440,120,000									62,000	440,120,000
Fremont N. P.			169,940	1,369,000,000							169,940	1,369,000,000
Groter N. P.									13,320	73,000,000	13,320	73,000,000
Klamath N. P.									2,000	5,500,000	2,000	5,500,000
Klamath Indian Reservation					179,400	1,689,000,000					179,400	1,689,000,000
Public Domain			57,880	116,000,000			26,780	53,500,000	7,480	15,500,000	92,140	185,000,000
State			3,520	7,700,000			3,140	6,750,000	40	500,000	6,700	14,950,000
C and C Grant									62,080	327,000,000	62,080	327,000,000
Private	33,000	435,500,000	167,080	2,161,000,000			115,265	1,258,000,000	242,210	3,648,000,000	577,555	7,500,500,000
Totals	95,000	895,620,000	418,420	3,653,700,000	179,400	1,689,000,000	145,185	1,518,250,000	327,130	4,069,500,000	1,165,135	11,824,970,000

Table No. 34²⁴

Summary of Southern Oregon-Northern California Project

1920 Beetle Damage in Yellow Pine

Number of Trees* and Volumes.

Ownership	Modoc Area		Fremont Area		Klamath Indian Reservation		Area South of Reservation		Area West of Klamath Lake		Totals	
	No. Trees	Volume in Bd.ft.	No. Trees	Volume in Bd.ft.	No. Trees	Volume in Bd.ft.	No. Trees	Volume in Bd.ft.	No. Trees	Volume in Bd.ft.	No. Trees	Volume in Bd.ft.
	Killed in : of 1920 Y.P.	: 1920 Y.P.	Killed in : of 1920 Y.P.	: 1920 Y.P.	Killed in : of 1920 Y.P.	: 1920 Y.P.	Killed in : of 1920 Y.P.	: 1920 Y.P.	Killed in : of 1920 Y.P.	: 1920 Y.P.	Killed in : of 1920 Y.P.	: 1920 Y.P.
	1920	Damage	1920	Damage	1920	Damage	1920	Damage	1920	Damage	1920	Damage
Modoc N. F.	3,135	3,113,000									3,135	3,113,000
Fremont N. F.			9,411	7,441,000							9,411	7,441,000
Crater N. F.									604	713,000	604	713,000
Klamath N. F.									230	300,000	230	300,000
Klamath Indian Reservation					32,120	22,910,000					32,120	22,910,000
Public Domain			4,357	3,546,000			3,721	2,736,000	1,056	1,318,000	9,136	7,600,000
State			191	163,000			363	280,000			554	443,000
O and C Grant									5,171	6,041,000	5,171	6,041,000
Private	3,015	3,048,000	21,153	17,736,000			19,982	14,975,000	30,357	32,900,000	74,507	68,659,000
Totals	6,150	6,161,000	35,112	28,866,000	32,120	22,910,000	24,066	17,991,000	37,420	41,272,000	134,868	117,220,000

*Average Volume of individual 1920 beetle killed trees given in Table No. 36.

Table No. 35

Summary of Southern Oregon-Northern California Control Project

1920 Beetle Damage in Yellow Pine by Ownership

Volume and Value* of Damage in Yellow Pine.

Ownership	Edge Area		Piedmont Area		Klamath Indian Reservation:		Area South of Reservation		Area West of Klamath Lake :		Totals	
	Volume of Yellow Pine Damage in	Value	Volume of Yellow Pine Damage in	Value	Volume of Yellow Pine Damage in	Value	Volume of Yellow Pine Damage in	Value	Volume of Yellow Pine Damage in	Value	Volume of Yellow Pine Damage in	Value
	Board Feet	Dollars	Board Feet	Dollars	Board Feet	Dollars	Board Feet	Dollars	Board Feet	Dollars	Board Feet	Dollars
Nespe N. F.	5,115,000	\$9,339									5,115,000	\$9,339
Piedmont N. F.			7,441,000	\$22,325							7,441,000	\$22,325
Gunter N. F.									713,000	\$2,129	713,000	2,129
Klamath N. F.									300,000	900	300,000	900
Klamath Indian Reservation					22,910,000	\$68,730					22,910,000	\$68,730
Public Domain			3,543,000	10,638			2,738,000	\$8,208	1,318,000	3,954	7,600,000	22,800
State			163,000	489			280,000	840			443,000	1,329
O and G Grant									6,041,000	18,123	6,041,000	18,123
Private	5,042,000	2,144	17,724,000	53,309			14,975,000	44,325	22,800,000	29,700	60,541,000	205,577
Totals	6,157,000	\$29,483	20,968,000	\$64,653	22,910,000	\$68,730	17,991,000	\$53,973	41,272,000	\$123,816	117,220,000	\$383,680

*\$5.00 per thousand board feet is the basis used.

Volume of Average Yellow Pine Tree Killed in 1920 by Beetles

For Each Unit on the 5 Areas.

Modoc Area

:Volume of Average Tree	
Name of Unit :	in Board Feet
Crowder Flat	1,020
Goose Lake	1,000
Four Mile	900

Fremont Area

:Volume of Average Tree	
Name of Unit :	in Board Feet
Harritt Creek	970
Maryl Creek	900
Waning Creek	900
Woods	800
Warts Valley	800
Worsefly	800
Woodlows	600
Wash Rock	800
Wey Creek	600
Weg Lake	800

Area South of Indian Reservation

:Volume of Average Tree	
Name of Unit :	in Board Feet
Willow Flat	700
Royston	800
Rock Canyon	700
Hildebrand	900
Swan	800
Shoner Mt.	500

Area West of Lake

:Volume of Average Tree	
Name of Unit :	in Board Feet
Jenny Creek	1,200
Johnson Prairie	1,200
Pokegama	1,400
Chase Butte	1,000
Clover Station	1,200
Round Lake	1,100
Woods	900
Aspen Lake	1,000
Eagle Ridge	700

Klamath Indian Reservation

Volume of Average Tree	
Name of Unit	in Board Feet
Chiloquin	800
Antelope	700
Sprague Canyon	900
Little Sprague	800
Eggman	800
Saddle Mountain	1,000
Trout Creek	700
Squaw Flat	1,000
Yainax	500
Whiskey Creek	600
Bly	600
Black Hills	700

Table No. 37

Summary of Southern Oregon-Northern California Control Project
 Percentage Ratio of 1920 Beetle Damage to Total Yellow Pine Volume*

Area	Total Yellow Pine Volume in Board Feet	1920 Beetle Damage in Board Feet	Ratio of 1920 Beetle Damage to Total Pine Volume
Modoc Area	893,620,000	6,161,000	Seven-tenths of one per cent
Fremont Area	3,653,700,000	28,886,000	Eight-tenths of one per cent.
Klamath Indian Reservation	1,889,000,000	22,910,000	One and two-tenths of one per cent.
Area South of Klamath Indian Reservation	1,318,250,000	17,991,000	One and four-tenths of one per cent.
Area West of Klamath Lake	4,069,500,000	41,272,000	One per cent.
Entire Project	11,834,070,000	117,220,000	One per cent.

*Considerable variation exists in the intensity of the infestation in the five areas included in the southern Oregon-northern California control project. This is shown by the map. Therefore, the "1920 beetle damage - total volume" ratios must not be used as a basis for judging the necessity for control work. The ratios are given to the nearest tenth of one per cent.

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	N.F.	Public	State	O & C	Private	Total
Area 1	15,320	7,480	40	62,080	242,210	327,130
Area 2		26,780	3,140	Indian 179,400	115,265	324,585
Area 3	231,940	57,880	3,520		220,080	513,420

Table No. 38

Summary of Southern Oregon-Northern California Control Project

Cost of Control - Spring of 1922*

	Mdoc Area	Fremont Area	Klamath Indian Reservation	Area South of Reservation	Area West of Klamath Lake	Totals
Ownership	Volume to be treated, Cost	Volume to be treated, Cost	Volume to be treated, Cost	Volume to be treated, Cost	Volume to be treated, Cost	Volume to be treated, Cost
Mdoc N. F.	1,556,500 \$ 7,004					1,556,500 \$ 7,004
Fremont N. F.		3,720,500 \$ 16,742				3,720,500 16,742
Crater N. F.					356,500 \$ 1,604	356,500 1,604
Klamath N. F.					150,000 675	150,000 675
Klamath Indian Reservation			11,455,000 \$ 51,547			11,455,000 51,547
Public Domain		1,773,000 \$ 7,979		1,368,000 \$ 6,156	659,000 2,965	3,800,000 17,100
State		81,500 367		140,000 630		221,500 997
C and C Grant					3,020,500 13,593	3,020,500 13,593
Private	1,524,000 \$ 6,858	8,868,000 \$ 39,906		7,487,500 \$ 33,694	16,450,000 74,025	34,329,500 154,483
Totals	3,080,500 \$ 13,862	14,443,000 \$ 64,994	11,455,000 \$ 51,547	8,995,500 \$ 40,480	20,636,000 \$ 92,862	58,610,000 \$ 263,745

*Volume to be treated is based on $\frac{1}{2}$ of volume of 1920 beetle loss in yellow pine. Cost of control is estimated at \$4.50 per thousand board feet of yellow pine to be treated.

Table No. 20

Summary of Southern Oregon - Northern California Control Project

Timbered Acreages, Yellow Pine Volumes and Control Costs

Divided According to Responsibility.

Responsibility for Control	Timbered Acreage	Yellow Pine Volume in Board Feet on Timbered Acreage	Estimated Control Costs for Spring of 1922
<u>Department of Interior.</u>			
Klamath Indian Reservation	179,400	1,889,000,000	51,547
Oregon -California Grant Lands	62,080	327,000,000	13,593
Vacant Public Domain	92,140	185,000,000	17,100
Total for Department of Interior	333,620	2,401,000,000	82,240
<u>Forest Service</u>			
Hoodo National Forest	62,000	460,120,000	17,004
Fremont National Forest	169,940	1,369,000,000	16,742
Crater National Forest	13,320	73,000,000	1,604
Klamath National Forest	2,000	5,500,000	675
Total for Forest Service	247,260	1,907,620,000	35,025
<u>State of Oregon - State Lands</u>	6,700	14,950,000	997
<u>Private Owners</u>	577,555	7,500,500,000	315,485
<u>Total for All Agencies</u>	1,165,135	11,824,070,000	263,745

OPY

Southern Oregon - Northern California

Pine Beetle Control Project

Acreage in Oregon

	Forest	Public	O & C	Klamath Indian Reservation	State	Private	Total
Area 1	13,160	7,480	62,080		40	226,570	309,330
Area 2		26,780		179,400	3,140	115,265	324,585
Area 3	169,940	57,880			3,520	187,080	418,420
	183,100	92,140	62,080	179,400	6,700	528,915	1,052,335

(pencil figures copied from original)

Area 1

Area 2

Area 3

231,940
57,880
289,820

222,080.

